

No. 750,220.

PATENTED JAN. 19, 1904.

F. RECHT.  
BOTTLE CLOSURE.

APPLICATION FILED NOV. 15, 1902.

NO MODEL.

Fig 1.

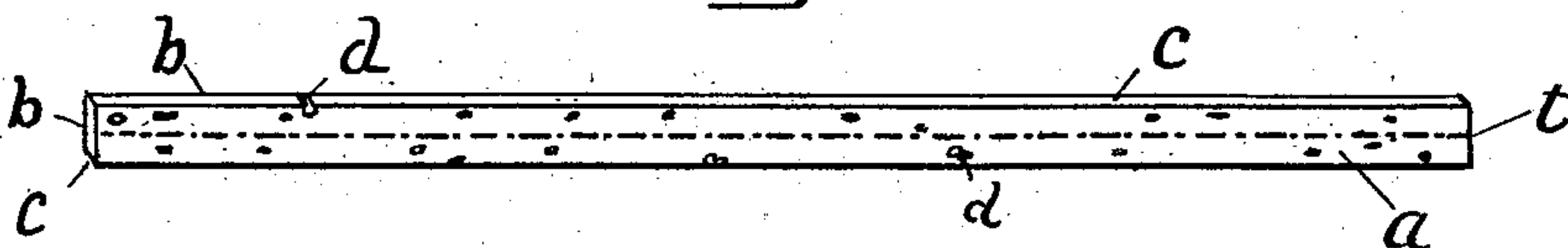


Fig 2.

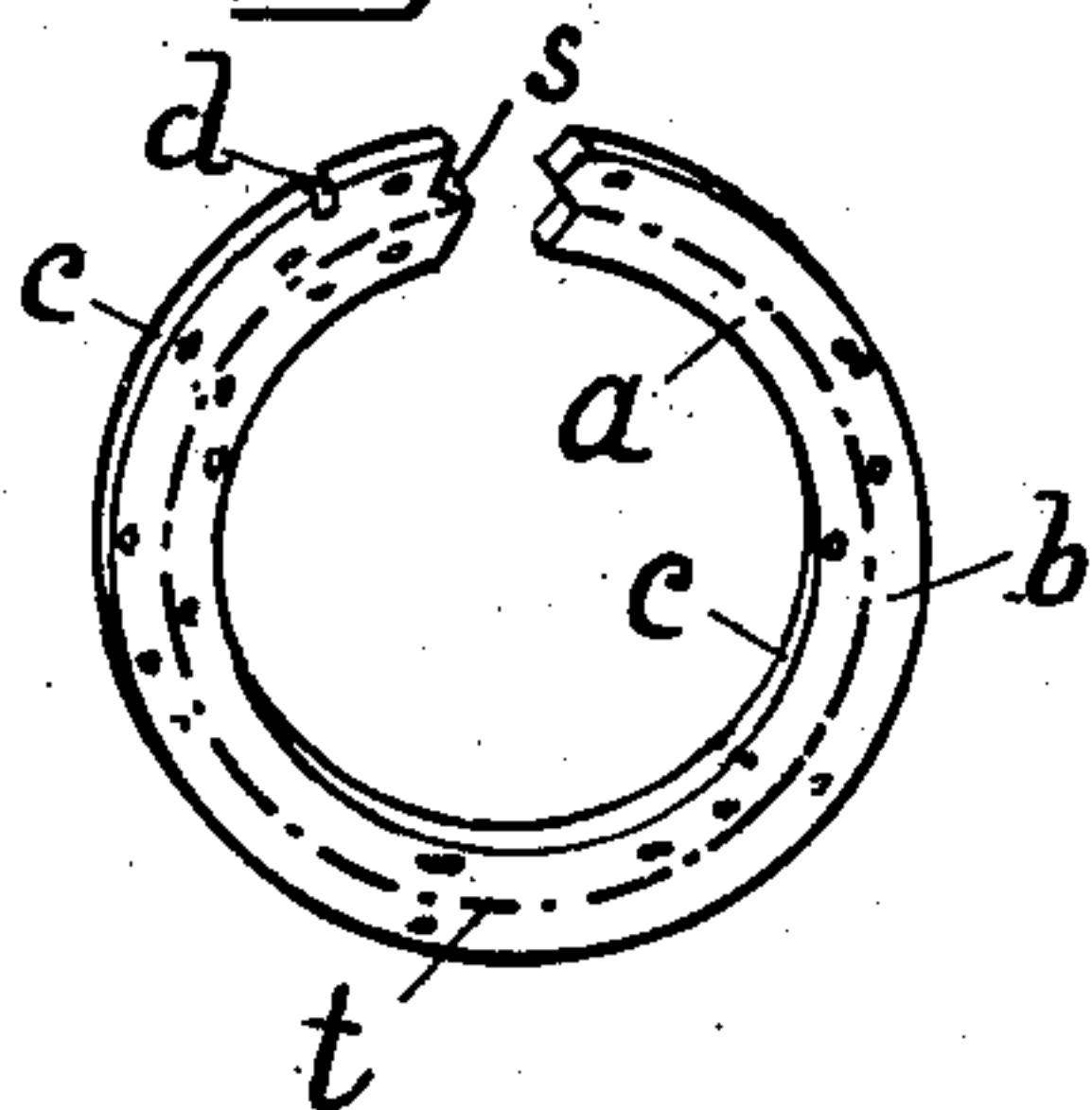


Fig 3.

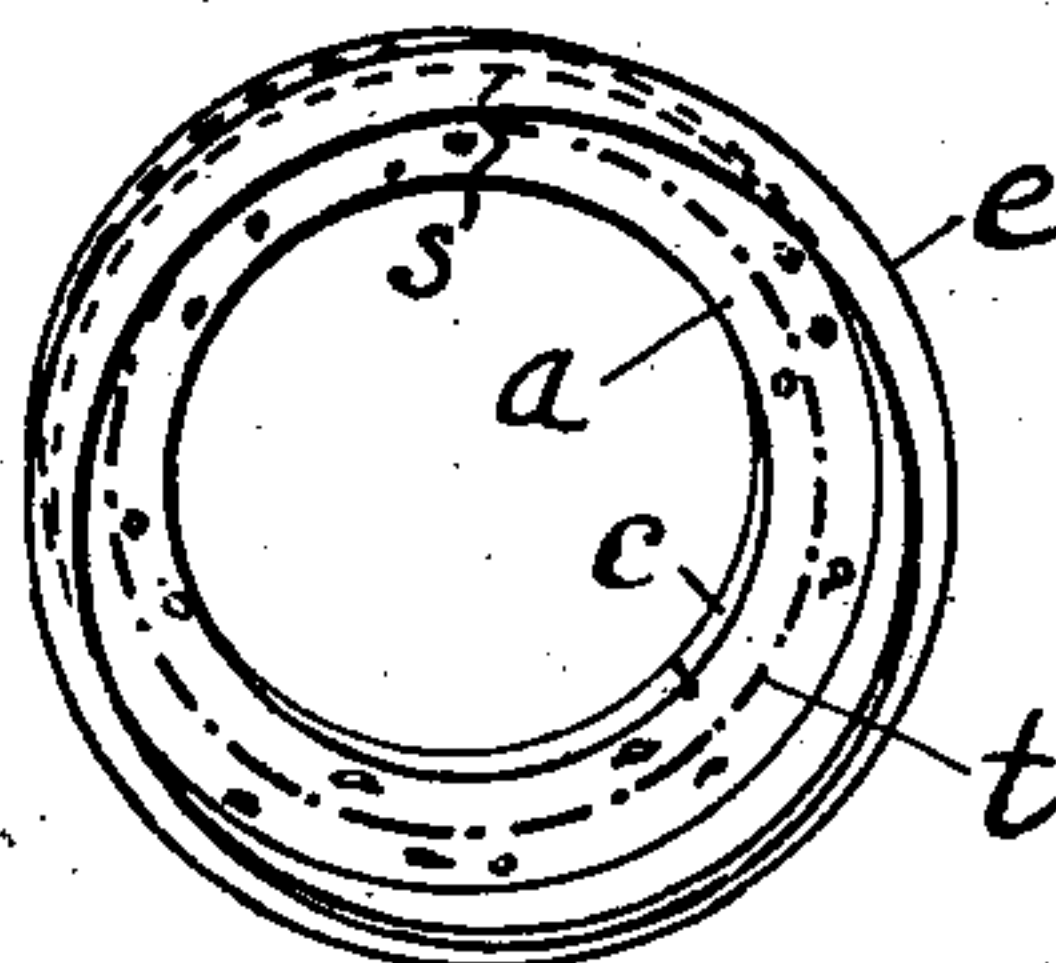
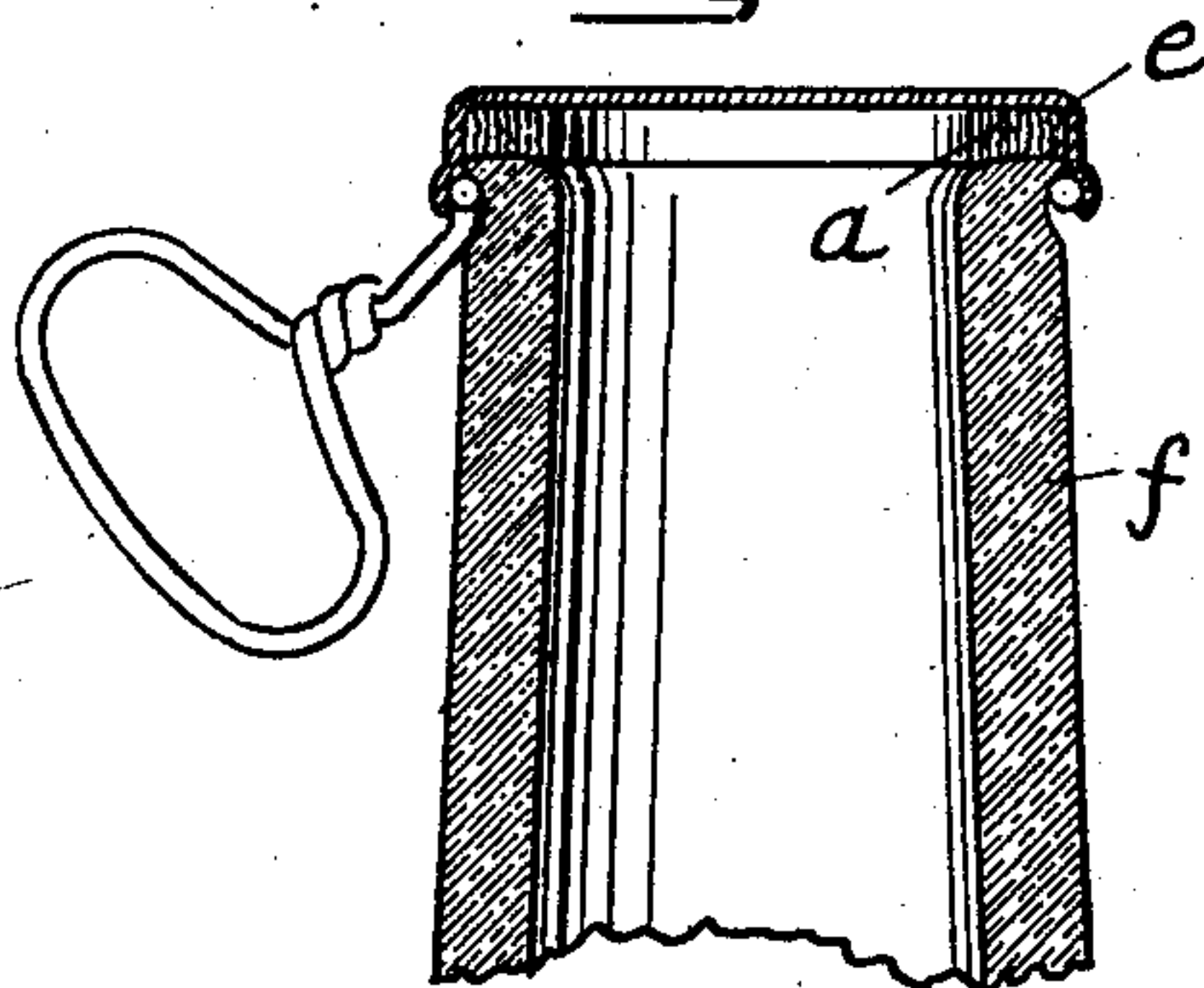


Fig 4.



Witnesses:

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# UNITED STATES PATENT OFFICE.

FREDERICK RECHT, OF NEW YORK, N. Y., ASSIGNOR TO REX CAP & CORK COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW YORK.

## BOTTLE-CLOSURE.

SPECIFICATION forming part of Letters Patent No. 750,220, dated January 19, 1904.

Original application filed January 27, 1902, Serial No. 91,434. Divided and this application filed November 15, 1902. Serial No. 131,466. (No model.)

*To all whom it may concern:*

Be it known that I, FREDERICK RECHT, a citizen of the United States of America, and a resident of the borough of Brooklyn, in the city of New York, county of Kings, and State of New York, have invented certain new and useful Improvements in Bottle-Closures, of which the following is a specification.

This invention is especially applicable to those forms of bottle-closure in which a flanged metal cap covers the mouth of the bottle and is locked to the bottle-neck, the locking being, for example, by indentations in the flange which engage under the lip of the bottle or by means of an intermediate locking-wire which engages matching grooves in the flange and bottle-neck, as is shown in my United States Letters Patent No. 646,627, dated April 3, 1900. In order to hermetically seal the bottle with such a cap, it is necessary that a substance of a compressible character for packing should be interposed between the rim of the bottle-mouth and the cap, and cork has proved to be the most satisfactory material. It is ordinarily used in the form of thin disks cut from cork slabs of the requisite thickness. There is an obvious waste between the disks in cutting, and the central portions of the disk serve no useful purpose in the bottle-cap. The purpose of my invention is to avoid this waste by the substitution for the usual packing-disk of a discontinuous cork ring formed from a cork strip. In bending and coiling the cork strip advantage is taken of the compressibility of cork to superimpose on the bending strains, which would otherwise be both of compression and tension, additional compression strains by compressing the strips endwise that will substantially neutralize the tensile strains.

In further explanation of my bottle-closure reference will be made to the accompanying sheet of drawings, which form a part of this specification.

Figure 1 shows a cork strip from which I form the packing-ring for the bottle-closure. Fig. 2 shows a discontinuous cork packing-ring formed from the cork strip. Fig. 3

shows a bottle-closure consisting of a bottle-cap with a discontinuous cork ring contained therein. Fig. 4 shows a portion of a bottle with the bottle-closure applied thereto.

The cork strips *a* are rectangular in section, with side walls *b b*, which form the upper and lower sides of the packing-ring, and edge walls *c c*, which form the outer and inner edges of the ring. In cutting the strips the cuts for the side walls are made transverse to the pores, so that the ends of the pores will terminate in the side walls. In the coiled ring they are therefore transverse to the plane of the ring, and the ends of the pores *d* are covered by the top of the cap *e* and the rim of the bottle *f*. The direction of the pores transverse to the plane of the ring is of manifest advantage, for example, over a radial direction. If the pores were radial, the inner ends of the pores would be exposed to the interior of the bottle and the outer ends, while covered by the flange of the cap, would be imperfectly closed thereby, since there is little or no pressure between the flange and the packing-ring, and the packing-ring would leak. There is considerable pressure, however, between the top of the cap and the ring and between the ring and the end of the bottle-mouth. This effectually closes both ends of all of the pores. The flange of the cap is provided with a groove which comes opposite a groove in the bottle-neck, and a wire *w* encircles the bottle-neck between the bottle-neck and the flange, thereby engaging the matching groove and securing the cap to the bottle. In order to economize material, the ring is made as thin as it can be and effectively pack the joint between the cap and bottle and compensate for irregularities in the opposing surfaces of the cap and bottle, between which the packing is interposed. Likewise the width of the side walls of the strip from which the ring is formed is for economy of material made no greater than is necessary for a tight joint between the packing-ring and the bottle and between the packing-ring and the cap. These conditions are met in a ring the thickness of which is less than the width of the ring and the width of the strip from



which the ring is formed. In coiling the ring from the cork strip the strip is therefore coiled edgewise.

Ordinarily when a bar or strip is bent or coiled by forces applied transversely to the strip that portion of the strip between the convex edge and a medial line  $t$  midway between the convex and concave edges will be stretched and under tension and that portion between the medial line and the concave edge will be shortened and under compression. Consequently under such treatment the length of the medial line will be unchanged by the coiling; but when the cork strip is subjected to endwise pressure and coiled that portion of the strip at the medial line and between the medial line and the convex edge is compressed and shortened to a considerable extent. There is therefore an endwise compression of substantially all parts of the strip, and this is likewise transverse to the pores of the cork and tends to close the pores. It is immaterial whether the compression and bending is simultaneous or not; but since the principle object, however, in subjecting the strip to compression is to prevent tensile strains in the strip that will be liable to rupture the strip it is important that the bending should not precede the compression.

If the cork is wet when it is compressed and bent and is dried while it is maintained in its compressed form and the external pressure is removed after it has dried, it will take a set and remain substantially in the form imparted to it by the external pressure.

In producing the packing-rings no particular form of apparatus is necessary, and a bottle-closure can be produced from a suitably-cut cork strip by coiling the cork strip by hand directly into the cap and exerting an endwise pressure on the strip while it is being coiled. If while exerting the endwise pressure serrated tools are brought to bear against the ends of the strip, the ends will be indented, thereby forming serrations  $s$ , so that the ends will form a better joint when brought together. In carrying out the invention I preferably follow the method and use the apparatus set forth in my application, Serial No. 91,434, filed January 27, 1902, of which this application is a division; but I do not confine myself in this application to a structure produced by following the precise method therein set forth or by the use of the mechanism therein illustrated or any substitute therefor other than the hands.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A cork strip forming a discontinuous ring the length of which along its medial line is less than the length of the strip from which it is formed.

2. A packing-ring for a bottle-closure con-

sisting of a discontinuous cork ring in which the pores are transverse to the plane of the ring.

3. A packing-ring for a bottle-closure consisting of a cork strip forming a discontinuous ring in which the pores are transverse to the plane of the ring and the length along the medial line of the ring is less than the length of the strip from which the ring is formed.

4. A bottle-closure consisting of a bottle-cap and a cork strip forming a discontinuous ring contained within the cap in which the length of the medial line of the ring is less than the length of the strip from which the ring is formed.

5. A bottle-closure consisting of a bottle-cap and a discontinuous cork ring in which the pores are transverse to the plane of the ring.

6. A bottle-closure consisting of a bottle-cap and a cork strip forming a discontinuous ring in which the pores are transverse to the plane of the ring and the length along the medial line of the ring is less than the length of the strip from which the ring is formed.

7. The combination with a bottle of a cap for the mouth thereof, means for securing the cap to the bottle, and a cork strip forming a discontinuous ring interposed between the cap and the bottle in which the length of the medial line of the ring is less than the length of the strip from which the ring is formed.

8. The combination with a bottle of a cap for the mouth thereof, means for securing the cap to the bottle, and a flat cork strip forming a discontinuous ring interposed between the cap and the bottle in which the pores are transverse to the plane of the ring and the thickness of the ring is less than the width of the strip from which the ring is formed.

9. The combination with a bottle of a cap for the mouth thereof, means for securing the cap to the bottle, and a flat cork strip forming a discontinuous ring interposed between the cap and the bottle in which the length of the medial line of the ring is less than the length of the strip from which the ring is formed, and the thickness of the ring is less than the width of the strip from which the ring is formed.

10. The combination with a bottle of a cap for the mouth thereof, means for securing the cap to the bottle, and a cork strip forming a discontinuous ring interposed between the cap and bottle in which the pores are transverse to the plane of the ring and the length along the medial line of the ring is less than the length of the strip from which the ring is formed.

Signed by me in New York city this 14th day of November, 1902.

FREDERICK RECHT.

Witnesses:

SAMUEL W. BALCH,  
THOMAS EWING, Jr.